ZooKeys 81: 39–50 (2011)
doi: 10.3897/zookeys.81.833
www.zookeys.org

RESEARCH ARTICLE

A peer-reviewed open-access journal
ZooKeys
Launched to accelerate biodiversity research

Review of the genus *Fibuloides* Kuznetsov in China (Lepidoptera, Tortricidae, Olethreutinae)

Aihuan Zhang[1,2,†], Houhun Li[1,‡]

1 *College of Life Sciences, Nankai University, Tianjin 300071, P. R. China* **2** *Beijing Key Laboratory of New Technology in Agricultural Application, College of Plant Science and Technology, Beijing University of Agriculture, Beijing 102206, P. R. China*

† *urn:lsid:zoobank.org:author:40700691-16E7-4B32-ABD2-D4D1F53CB37D*
‡ *urn:lsid:zoobank.org:author:F6AAB0C0-F312-4035-A08B-3DFE03D02F62*

Corresponding author: *Houhun Li* (lihouhun@nankai.edu.cn)

Academic editor: *E. van Nieukerken* | Received 26 December 2010 | Accepted 8 February 2011 | Published 18 February 2011

urn:lsid:zoobank.org:pub:4C4CC5D8-11E2-4DAF-BD38-8D9485147AE0

Citation: Zhang A, Li H (2011) Review of the genus *Fibuloides* Kuznetsov in China (Lepidoptera, Tortricidae, Olethreutinae). ZooKeys 81: 39–50. doi: 10.3897/zookeys.81.833

Abstract

Species of the genus *Fibuloides* Kuznetsov that occur in China are reviewed. *Fibuloides trapezoidea*, **sp. n.** is described as new; *F. levatana* (Kuznetsov) and *F. modificana* Kuznetsov are newly recorded for China; *Acroclita nigrovenana* Kuznetsov, **syn. n.** is considered as a synonym of *F. corinthia* (Meyrick); and *Eucoenogenes elongata* Zhang & Li and *E. wuyiensis* Zhang & Li are transferred to *Fibuloides*, resulting in two new combinations. A key to the nine Chinese species of *Fibuloides* is given.

Keywords

Lepidoptera, Tortricidae, *Fibuloides*, new species, new combination, synonym, China

Introduction

Fibuloides was proposed by Kuznetsov (1997b) with *F. modificana* Kuznetsov, 1997 from South Vietnam as the type species. The characters of *Fibuloides* given by Kuznetsov are as follows: the costal fold narrow in male; the forewing with R_4 and

Copyright *A. Zhang, H. Li.* This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

R_5 stalked, R_3 with base close to this stem; CuA_1 strongly curved and originating from near base of M_3; hindwing with M_3 and CuA_1 stalked; and the valva extremely modified, with an unusually long, sclerotized process originating from the apex of the sacculus. Brown (2005) included one species, *F. modificana*, in the world catalogue of Tortricidae.

Horak (2006) described *F. phycitipalpia* Horak, 2006 and *F. minuta* Horak, 2006 from Queensland and New South Wales, Australia, and transferred seventeen species to the genus. She pointed out that males of *Fibuloides* usually have a notch at the base of the flagellum, bear modified fringe scales along the anal margin of the hindwing or a pencil of long hairscales from its base, have transverse bands of modified scaling dorsally on the abdomen, and the weak lateral arms of the gnathos from below middle of the tegumen end in two sclerotized vertically rising bands. Pinkaew (2008) described *F. khaonanensis* from Thailand and transferred *Eucoenogenes bicucullus* Pinkaew, 2005 and *E. vaneeae* Pinkaew, 2005 to *Fibuloides*.

Currently the genus includes 23 species distributed in the Palaearctic, Oriental and Australian regions (Brown 2005; Horak 2006; Pinkaew 2008; Baixeras et al. 2009). Prior to this study, five species were recorded from China (Kawabe et al. 1992; Liu and Li 2002; Zhang and Li 2005). In the present paper, we describe one new species, record two species new for the Chinese fauna, transfer two species from *Eucoenogenes* to *Fibuloides*, and propose *Acroclita nigrovenana* Kuznetsov, 1988 from North Vietnam as a synonym of *F. corinthia* (Meyrick, 1912) described from Sri Lanka. A key to the Chinese species is provided based on the male genitalia of the examined specimens.

Material and methods

This study is based on the examination of specimens collected using light traps in the forests and mountains, mainly from the southern part of China. The terminology for the forewing pattern follows Brown and Powell (1991) as refined by Baixeras (2002). Methods of genitalia dissection follow Li (2002). Unless indicated otherwise, all the specimens examined, including the types, are deposited in the Insects Collection, College of Life Sciences, Nankai University, Tianjin, China.

Abbreviations

TL Type locality;
BMNH The Natural History Museum, London, UK;
ZMAS Zoological Institute, Russian Academy of Sciences, St. Petersburg (Leningrad), Russia;
NKUM Insects Collections, College of Life Sciences, Nankai University, Tianjin, China;
USNM National Museum of Natural History, Washington, D. C., USA.

Taxonomic accounts

Genus *Fibuloides* Kuznetsov, 1997

Fibuloides Kuznetsov, 1997: 810. Type species: *F. modificana* Kuznetsov, 1997: 810, by original designation.

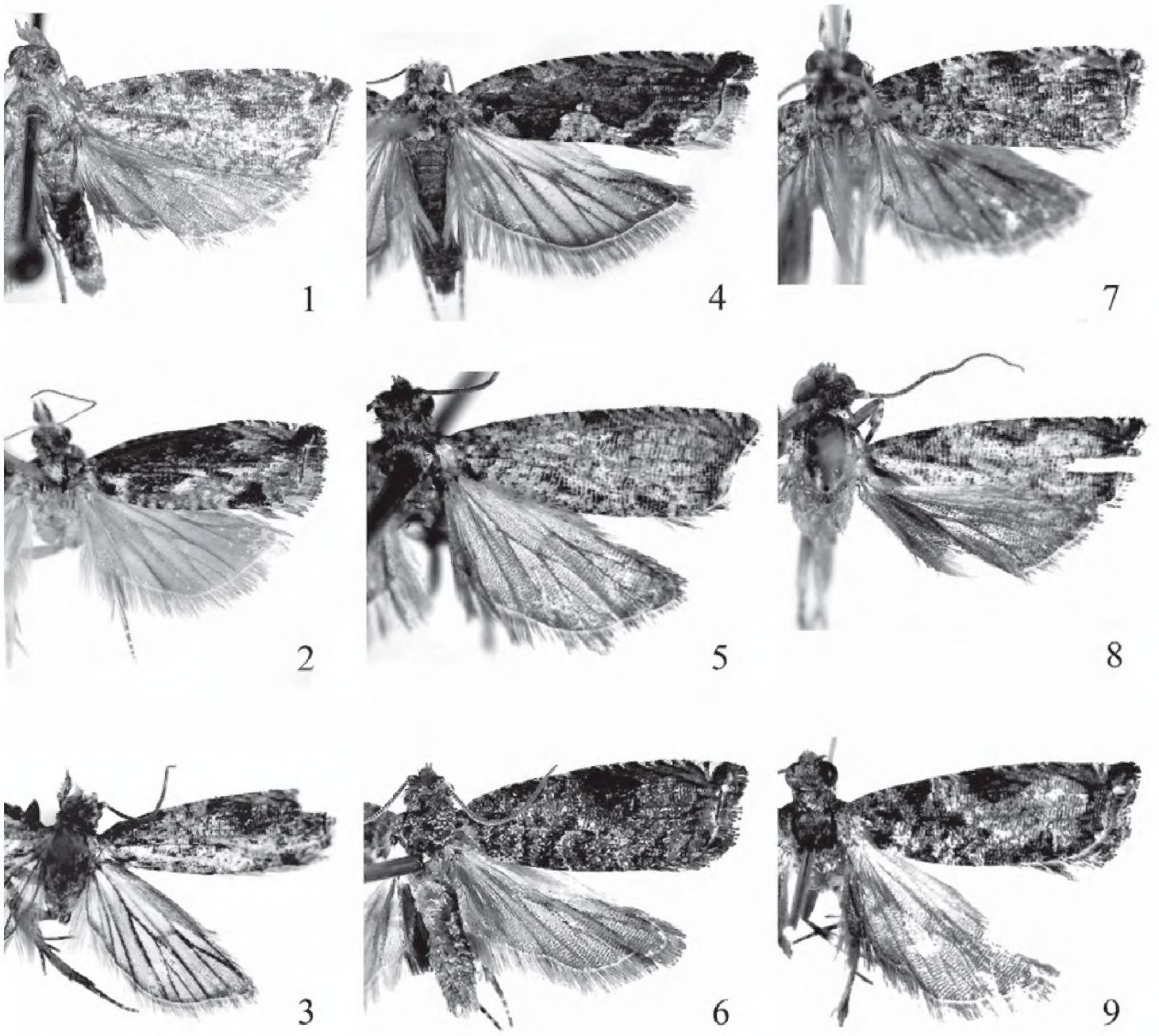
Key to Chinese species of *Fibuloides* based on male genitalia

1 Uncus blunt apically **2**
– Uncus pointed apically **4**
2 Sacculus with a digitate process, neck of valva with two enlarged, flattened bristles ..... ***F. japonica***
– Sacculus without digitate process, neck of valva with one or more than three enlarged, flattened bristles **3**
3 Uncus drooping, projected outward, socius upturned; neck of valva with five enlarged, flattened bristles on left side and four on right side, cucullus somewhat elliptic ..... ***F. elongata***
– Uncus not drooping, socius drooping, neck of valva with one enlarged, flattened bristle, cucullus somewhat trapezoidal ..... ***F. modificana***
4 Neck of valva without enlarged, flattened bristles **5**
– Neck of valva with one or more enlarged, flattened bristles **7**
5 Cucullus bipartite, nearly ovate, or nearly trapezoidal **6**
– Cucullus very long and narrow, with long point on end ..... ***F. levatana***
6 Cucullus nearly trapezoidal, uncus with tips straight and parallel ..... ***F. trapezoidea***
– Cucullus bipartite, nearly ovate, uncus with tips bent outward .... ***F. corinthia***
7 Socius triangular, angle of sacculus indistinct ..... ***F. wuyiensis***
– Socius lobe-shaped, angle of sacculus obtuse **8**
8 Cucullus nearly triangular; socius broad and short, about twice as long as wide ..... ***F. aestuosa***
– Cucullus ovate; socius slender, about three times as long as wide .... ***F. cyanopsis***

***Fibuloides trapezoidea* Zhang & Li, sp. n.**
urn:lsid:zoobank.org:act:EA201525-B594-47F4-A928-6C254A1B37C6
Figs 1, 10

Type material. Holotype ♂ – **China, Guizhou Province:** Chishui (28°34'N, 105°42'E), 390 m, 30.V.2000, coll. Yanli Du, genitalia slide no. YHL04481; Paratype – 1 ♂, 27.V.2000, other same data as for holotype, genitalia slide No. ZAH10019.

Diagnosis. This species is similar to *F. cyanopsis* (Meyrick, 1912) in the shape of uncus and socius, but can be distinguished by the trapezioidal cucullus and the absence



Figures 1–9. Adults of *Fibuloides* spp. **1** *F. trapezoidea* Zhang & Li, sp. n., ♂ **2** *F. aestuosa* (Meyrick), ♂ **3** *F. corinthia* (Meyrick), ♂ **4** *F. cyanopsis* (Meyrick), ♀ **5** *F. elongata* (Zhang & Li), ♂ **6** *F. japonica* (Kawabe), ♂ **7** *F. levatana* (Kuznetsov), ♂ **8** *F. modificana* Kuznetsov, ♂ **9** *F. wuyiensis* (Zhang & Li), ♂.

of the enlarged, flattened bristles on the neck of valva. In *F. cyanopsis* the cucullus is ovate and the neck of valva has two or more short enlarged, flattened bristles on its ventral side.

Description. Adult (Fig. 1). Forewing length 6.5 mm. **Head:** Vertex with gray scales; frons white. Antenna light brown. Labial palpus slender, gray intermixed with brown, third segment porrect. **Thorax:** Thorax and tegula gray intermixed with light brown. Forewing elongate triangular, with ground color dark gray; basal patch extending from costal 1/4 to 1/3 of dorsum, protrudent in middle on outer side; median fascia short and broad, extending from costal half, terminated at end of cell; ocellus nearly quadrate, containing some short brown striae; apex brown, protrudent; termen slightly concave below apex, bordered by brown scales; costa with nine pairs of strigulae from base to apex, each pair of strigulae with a short brown stria extending obliquely; first to fourth pairs between base of wing and the point where Sc meets costa, broad brown patch lying between second and third pairs; fifth and sixth pairs between Sc and R_1; distal three pairs distributed between pairs of veins

R_1–R_2, R_2–R_3, R_3–R_4 respectively, separated from each other by dark brown scales; cilia gray mixed with brown. Hindwing and cilia gray. Legs gray, tarsi with brown rings.

Abdomen: Male genitalia (Fig. 10). Uncus bifurcated from near base, produced into two slender, parallel and widely separated tips. Socius broad and short, about twice as long as wide, drooping, hairy, with round end. Valva broad at base; neck distinct, without enlarged, flattened bristles; sacculus about twice size of cucullus, with a line of flattened long bristles; cucullus trapezoidal, hairy, with marginal spines. Anellus closely surrounding basal 1/3 of aedeagus; aedeagus long tubular, cornuti consisting of a bunch of curved spines.

Female. Unknown.

Distribution. China (Guizhou).

Etymology. The specific name is derived from Latin *trapezoideus* (= trapeziform), referring to the shape of the cucullus.

Fibuloides aestuosa **(Meyrick, 1912)**

Figs 2, 11, 19

Spilonota aestuosa Meyrick, 1912: 854. Holotype ♂, TL: India, deposited in BMNH.
Acroclita ligyropis Meyrick, 1937: 176; Clarke 1958: 267.
Eucoenogenes aestuosa (Meyrick, 1912): Kuznetsov 1976: 12; Kawabe 1982, 1: 120, 2: 173; Razowski 1989: 256; Byun *et al.* 1998: 160; Razowski 1999: 446; Kuznetsov 2001: 402; Liu and Li 2002: 319.
Fibuloides aestuosa (Meyrick, 1912): Horak 2006: 330.

Material examined. China, Sichuan Province: 1 ♀, Baoxing County, 1600 m, 3.VIII.2004, coll. Yingdang Ren. **Zhejiang Province:** 2 ♂♂, 3 ♀♀, Mt. Tianmu, 350–1500 m, 18-20.VIII.1999, coll. Houhun Li *et al.* **Hubei Province:** 2 ♂♂, 3 ♀♀, Hefeng County, 1260 m, 15–16.VII.1999, coll. Houhun Li *et al.* **Henan Province:** 1 ♀, Song County, 1580 m, 23.VII.2002, coll. Xinpu Wang.

Host plants. Fagaceae: *Castanea mollissima* Blume and *C. cranata* Sieb. *et* Zucc. (Kuzenetsov 2001; Liu and Li 2002).

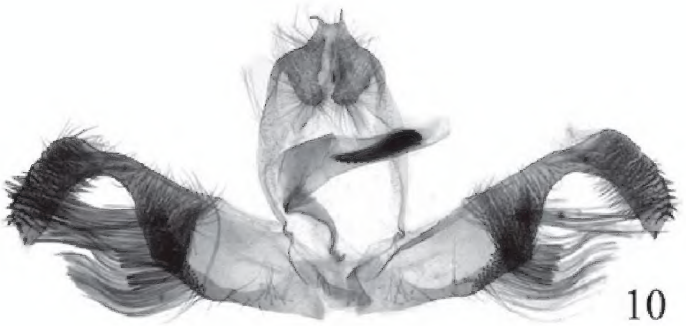
Distribution. China (Anhui, Henan, Hubei, Guangxi, Liaoning, Sichuan, Yunnan, Zhejiang), Korea, Japan, India, Bengal.

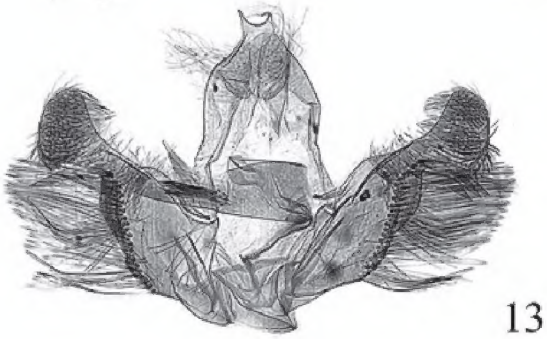
Remarks. The number of thick flattened bristles below the neck of the valva in the male genitalia is variable (two or more).

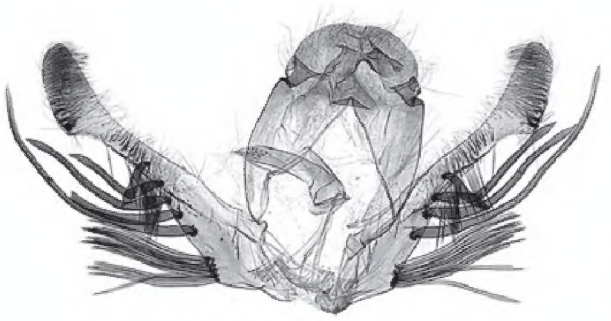
Fibuloides corinthia **(Meyrick, 1912)**

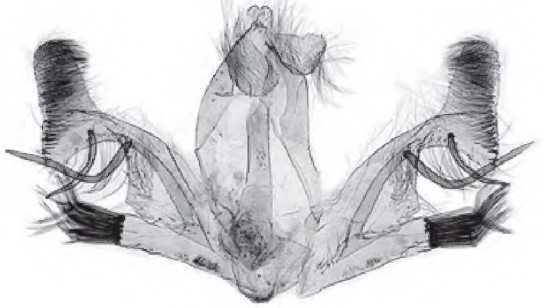
Figs 3, 12

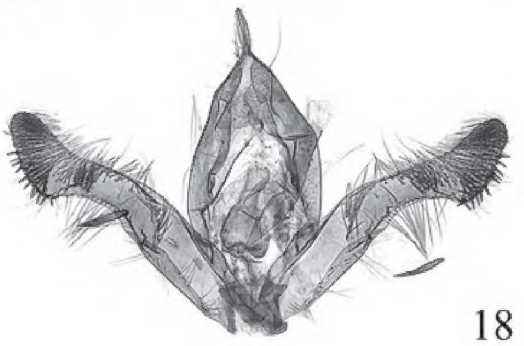
Acroclita corinthia Meyrick, 1912: 858; Diakonoff 1950: 277; Clarke 1958: 271; Kawabe *et al.* 1992: 108. Lectotype ♂, TL: Sri Lanka, deposited in BMNH.
Fibuloides corinthia (Meyrick, 1912): Horak 2006: 330.











Figures 10–18. Male genitalia of *Fibuloides* spp. **10** *F. trapezoidea* Zhang & Li, sp. n., slide No. YHL04481 **11** *F. aestuosa* (Meyrick), slide No. ZAH03603 **12** *F. corinthia* (Meyrick), slide No. ZAH04036 **13** *F. cyanopsis* (Meyrick), slide No. ZAH03758 **14** *F. elongata* (Zhang & Li), slide No. ZAH03725 **15a–15b** *F. japonica* (Kawabe), slide Nos. **a**: ZAH03173, **b**: ZAH04296 **16** *F. levatana* (Kuznetsov), slide No. ZAH04299 **17** *F. modificana* Kuznetsov, slide No. LJM04401 **18** *F. wuyiensis* (Zhang & Li), slide No. ZAH04215.

Acroclita nigrovenana Kuznetsov, 1988: 88; Nasu 1993: 216; Kuznetsov 2001: 408.
Holotype ♂, TL: Vietnam, deposited in ZMAS. **syn. nov.**
Fibuloides nigrovenana (Kuznetsov, 1988): Horak 2006: 330.

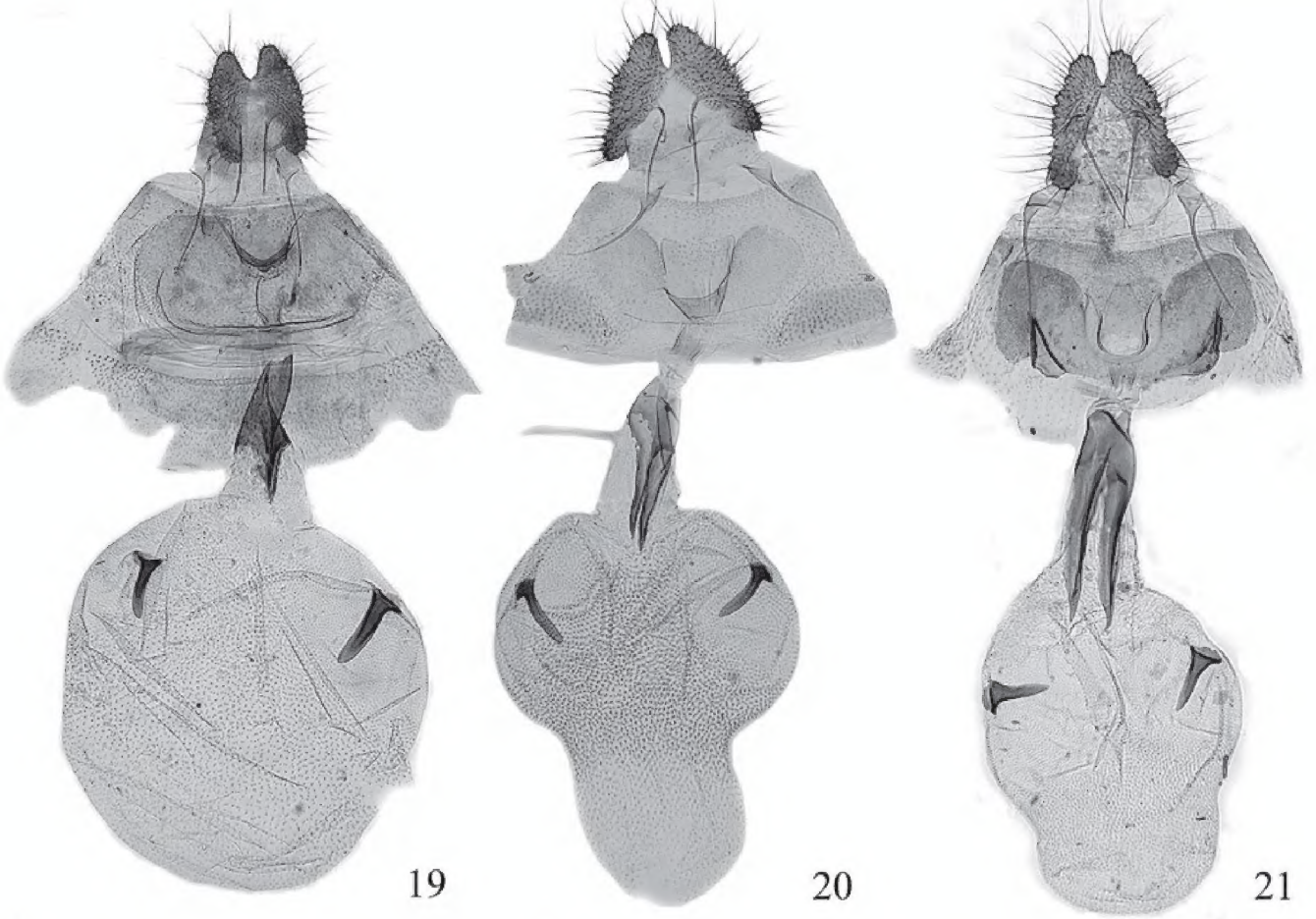
Material examined. China, Yunnan Province: 1 ♂, Yuanjiang County, 710 m, 28.IV.1995, coll. Guangyun Yan.

Host plant. Sapindaceae: *Litchi chinensis* Sonn. (Kuznetsov 2001).

Distribution. China (Yunnan, Taiwan); Sri Lanka; India.

Remarks. The male uncus is produced into two sharp, outwardly bent tips, and the cucullus is nearly elliptic, ending in a spine, with a ventral process bearing a short distal spine.

Diakonoff (1950) designated the male lectotype and Clarke (1958) provided photographs of the adult and male genitalia. Horak (2006) transferred *A. corinthia* and *A. nigrovenana* to *Fibuloides*. We synonymize *F. nigrovenana* with *corinthia* based on the the study of the adult and the male genitalia. Though we were unable to locate the type of *F. corintha* in BMNH, the two species appear to be conspecific based on a comparison of the photo in Clarke (1958) and the illustration in Rose and Pooni (2005) of *Acroclita corinthia* with the photo of *A. nigrovenana* from Japan in Nasu (1993) as well as with the adult and male genitalia of the Chinese specimen.



Figures 19–21. Female genitalia of *Fibuloides* spp. **19** *F. aestuosa* (Meyrick), slide No. ZAH03604 **20** *F. cyanopsis* (Meyrick), slide No. ZAH03757 **21** *F. japonica* (Kawabe), slide No. ZAH03645.

***Fibuloides cyanopsis* (Meyrick, 1912)**
Figs 4, 13, 20

Eucosoma cyanopsis Meyrick, 1912: 866; Clarke 1958: 360. Holotype ♂, TL: India, deposited in BMNH.
Eucoenogenes cyanopsis (Meyrick, 1912): Kuznetsov 1988: 81; Kawabe 1989: 52; Razowski 1999: 446; Kuznetsov 2001: 402.
Fibuloides cyanopsis (Meyrick, 1912): Horak 2006: 330.
Eucosma melanochlaena Meyrick, 1936: 611. Holotype ♂, TL: Indonesia, deposited in BMNH.

Material examined. China, Guangxi Zhuangzu Autonomous Region: 1 ♂, 3 ♀♀, Shangsi County, 260–770 m, 1–3.IV.2002, coll. Shulian Hao and Huaijun Xue; 1 ♂, 3 ♀♀, Mt. Maoer, 550–1100 m, 19–20.IV.2002, coll. Shulian Hao and Huaijun Xue. **Guangdong Province:** 1 ♀, Lianzhou, 650 m, 23.VI.2004, coll. Dandan Zhang. **Guizhou Province:** 1 ♀, Jiangkou County, 1700 m, 29.VII.2001, coll. Houhun Li and Xinpu Wang.

Distribution. China (Guangdong, Guangxi, Guizhou), Japan, Vietnam, Indonesia, India.

Remarks. The cucullus of this species is ovate, and the neck of valva has two or three short enlarged, flattened bristles.

***Fibuloides elongata* (Zhang & Li, 2005) comb. n.**
Figs 5, 14

Eucoenogenes elongata Zhang & Li, 2005: 126. Holotype ♂, TL: China, deposited in NKUM.

Material examined. Holotype ♂, **China, Yunnan Province:** Weishan County, 2200 m, 20.VII.2001, coll. Houhun Li and Xinpu Wang, genitalia slide no. ZAH03725.

Distribution. China (Yunnan).

Remarks. This species can be easily distinguished from its congeners by the drooping uncus with a blunt apex, and the narrow valva with the neck bearing five long, flattened flagellate bristles on the left side and four on the right side.

***Fibuloides japonica* (Kawabe, 1978)**
Figs 6, 15a–15b, 21

Eucoenogenes japonica Kawabe, 1978: 185; Kawabe 1982, 1: 120, 2: 173; Byun *et al.* 1998: 160; Razowski 1999: 446; Kuznetosv 2001: 402; Liu and Li 2002: 319. Holotype ♂, TL: Japan, deposited in USNM.
Fibuloides japonica (Kawabe, 1978): Horak 2006: 330.

Material examined. China, Shaanxi Province: 2 ♂♂, Ningshan County, 880 m, 17.VI.1987, coll. Houhun Li; 9 ♂♂, 3 ♀♀, Yangxian County, 600–680 m, 17–18. IV.1995, coll. Hongjian Wang. **Henan Province:** 3 ♂♂, Luoshan County, 350 m, 2.V.2000, coll. Haili Yu; 2 ♂♂, Xinyang City, 700 m, 11.VII.1997, coll. Houhun Li; 1 ♂, Tongbai County, 300 m, 11.IX.2001, coll. Houhun Li and Ole Karsholt; 2 ♂♂, Chishui County, Guizhou Province, 240 m, 21–22.IX.2000, coll. Haili Yu. **Guizhou Province:** 1 ♂, Xishui County, 500 m, 25.IX.2000, coll. Haili Yu; 5 ♂♂, 1 ♀, Daozhen County, 1300 m, 20.VIII.2004, coll. Yunli Xiao. **Zhejiang Province:** 1 ♂, Mt. Tianmu, 650 m, 20.VIII.1999, coll. Houhun Li. **Hunan Province:** 1 ♀, Zhangjiajie, 650 m, 7.VIII.2001, coll. Houhun Li and Xinpu Wang. **Fujian Province:** 1 ♂, Nanping, 850 m, 23.IX.2002, coll. Xinpu Wang; 1 ♂, Jianning County, 350 m, 25.IX.2002, coll. Xinpu Wang. **Hubei Province:** 1 ♂, Hefeng County, 1260 m, 16.VII.1999, coll. Houhun Li.

Distribution. China (Zhejiang, Anhui, Fujian, Henan, Hubei, Hunan, Sichuan, Guizhou, Shaanxi, Taiwan), Korea, Japan.

Remarks. This species is distinguished by the digitate process on the sacculus in the male genitalia bearing either dense tufted bristles or five enlarged, flattened bristles distally.

Discussion. In the examined specimens, the appearance of the adults and the female geniatlia are identical, but the male genitalia have two types (Figs 15a and 15b): in figure 15a, the relatively elongate uncus looks like a pair of long ears of a rabbit, and the slender digitate process of the sacculus bears five enlarged, flattened bristles distally; in figure 15b, the short uncus is emarginated posteriorly and somewhat heart-shaped, and the digitate process of the sacculus is relatively broad and bears dense tufted bristles distally. The two types of male genitlia might represent two different species, but in this paper we treat these differences as individual variations. We may confirm whether they are two species or just one species after a geographic analysis, which can be done when more specimens are available.

Fibuloides levatana (Kuznetsov, 1997)

Figs 7, 16

Eucoenogenes levatana Kuznetsov, 1997: 197. Holotype ♂, TL: Vietnam, deposited in ZMAS.

Fibuloides levatana (Kuznetsov, 1997): Horak 2006: 330.

Material examined. China, Zhejiang Province: 1 ♂, Mt. Tianmu, 350 m, 20.VIII.1999, coll. Houhun Li *et al.* **Fujian Province:** 1 ♂, Yongtai County, 550 m, 18.IX.2002, coll. Xinpu Wang.

Distribution. China (Zhejiang, Fujian), Vietnam.

Remarks. This species can be easily distinguished by its Y-shaped uncus and the slender distally attenuate cucullus. It is new for China.

Fibuloides modificana **Kuznetsov, 1997**
Fig. 8, 17

Fibuloides modificana Kuznetsov, 1997: 810. Holotype ♂, TL: Vietnam, deposited in ZMAS.

Material examined. China, Guangxi Zhuangzu Autonomous Region: 1 ♂, Leye County, 665 m, 24.VII.2004, coll. Jiasheng Xu.

Distribution. China (Guangxi), Vietnam.

Remarks. The uncus of this species is broad and distally bifurcate, the valva has a long, sinuate, flattened bristle on the neck, and the cucullus is elongate subrectangular and distally downcurved. In figure 17 the long flattened bristle is off the inserted hole which is located on the ventral side of the neck instead of on the angle of the sacculus (see arrow in fig. 17). It is new for China.

Fibuloides wuyiensis **(Zhang & Li, 2005) comb. n.**
Figs 9, 18

Eucoenogenes wuyiensis Zhang & Li, 2005: 127. Holotype ♂, TL: China, deposited in NKUM.

Material examined. Holotype ♂, **China**, **Fujian Province:** Mt. Wuyi, 1000 m, 26.V.2004, coll. Haili Yu, genitalia slide no. ZAH04215; Paratype: 1 ♂, same data as for holotype.

Distribution. China (Fujian).

Remarks. This species is distinguishable from its congeners by the following characters: the uncus tips are slender and closely parallel; the socius is laterally triangular; and the neck of the valva has a short flattened bristle.

Acknowledgements

The authors are grateful to Dr. N. Pinkaew, Department of Entomology, Kasetsart University, Thailand and Dr. Y. Nasu, Osaka Prefectural Agricultural, Forestry Research Center, Japan for providing us with references and good advice; to Dr. John W. Brown (Systematic Entomology Lab, National Museum of Natural History, Washington, DC) and Dr. Marianne Horak (CSIRO Ecosystem Sciences, Canberra) for reviewing the manuscript and giving valuable suggestions. The research was supported by the National Natural Science Foundation of China (No. J0930005) and Beijing Nova Program (No. 2008B23).

References

Baixeras J (2002) An overview of genus-level taxonomic problems surrounding *Argyroploce* Hübner (Lepidoptera: Tortricidae), with description of a new species. Annals of the Entomological Society of America 95(4): 422–431.

Baixeras J, Brown JW, Gilligan TM (2009) T@RTS: Online World Catalogue of the Tortricidae (Version 1.3.1). Available from http://www.tortricidae.com/catalogue.asp. [accessed 23 June 2010]

Brown JW (2005) Tortricidae (Lepidoptera). World Catalogue of Insects 5: 741 pp.

Brown RL, Powell J (1991) Description of a new species of *Epiblema* (Lepidoptera: Tortricidae: Olethreutinae) from coastal redwood forests in California with an analysis of the forewing pattern. Pan-Pacific Entomologist 67(2): 107–114.

Byun BK, Bae YS, Park KT (1998) Illustrated Catalogue of Tortricidae in Korea (Lepidoptera). Korea Research Institute of Bioscience and Biotechnology & Center for Insect Systematics: 96–317.

Clarke JFG (1958) Catalogue of the Type Specimens of Microlepidoptera in the British Museum (Natural History) described by Edward Meyrick. 3: 1–600, Trustees of the British Museum.

Diakonoff A (1950) The type specimens of certain oriental Eucosmidae and Carposinidae (Microlepidoptera) described by Edward Meyrick together with descriptions of new Eucosmidae and Carposinidae in the British Museum (Natural History). Bulletin of the British Museum (Natural History) (Entomology) 1: 275–300.

Horak M (2006) Olethreutine moths of Australia (Lepidoptera: Tortricidae). Monographs on Australian Lepidoptera 10: 1–522.

Kawabe A (1978) Descriptions of three new genera and fourteen new species of the subfamily Olethreutinae from Japan (Lepidoptera, Tortricidae). Tinea 10(19): 173–191.

Kawabe A (1982) Tortricidae. In: Inoue H, Sugi S, Kuroko H, Kawabe A (Eds) Moths of Japan 1: 1–955; 2: 1–552.

Kawabe A (1989) Records and descriptions of the subfamily Olethreutinae (Lepidoptera: Tortricidae) from Thailand. Microlepidoptera of Thailand 2: 23–82.

Kawabe A, Komai F and Razowski J (1992) Tortricoidea. In: Heppner JB, Inoue H (Eds) Lepidoptera of Taiwan 1(2) Checklist: 103–109.

Kuznetsov VI (1976) New species and subspecies of the leafrollers (Lepidoptera, Tortricidae) of the fauna of the Palaearctic. Trudy Zoologicheskogo Instituta, Leningrad 64: 3–33.

Kuznetsov VI (1988) New and little-known leaf-rollers of the subfamily Olethreutinae (Lepidoptera, Tortricidae) of the fauna of North Vietnam. Trudy Zoologicheskogo Instituta, Leningrad 176: 72–97.

Kuznetsov VI (1997a) Little known and new species of tortricid moths (Lepidoptera, Totricidae) of the fauna of Vietnam. Entomologicheskoe Obozrenie 76(1): 186–202, 236.

Kuznetsov VI (1997b) New species of the subfamily Olethreutinae (Lepidoptera, Tortricidae) from the south of Vietnam. Entomologicheskoe Obozrenie 76(4): 797–812, 953.

Kuznetsov VI (2001) Tortricoidea. In: Ler PA (Ed) Key to the insects of Russian Far East. Vol. V. Trichoptera and Lepidoptera. Pt. 3. Vladivostok Dal'nauka, 621 pp.

Li HH (2002) The Gelechiidae of China (I) (Lepidoptera: Gelechioidea). 538 pp. Nankai University Press, Tianjin.

Liu YQ, Li GW (2002) Fauna Sinica, Insecta, Vol. 27, Lepidoptera, Tortricidae. 463 pp. Chinese Science Press, Beijing.

Meyrick E (1912) Descriptions of Indian Microlepidoptera. Journal of the Bombay Natural History Society 21: 852–877.

Meyrick E (1936) Exotic Microlepidoptera 4: 609–642.

Meyrick E (1937) Exotic Microlepidoptera 5: 65–160.

Nasu Y (1993) New record of *Acroclita nigrovenana* (Lepidoptera, Tortricidae) from Japan. Japanese Journal of Entomology 61(2): 216.

Pinkaew N (2008) A new species and two new combinations in the genus *Fibuloides* Kuznetsov (Lepidoptera: Tortricidae) from Thailand. Zootaxa 1688, 61–65.

Pinkaew N, Chandraptya A, Brown RL (2005) Two new species and a new record of *Eucoenogenes* (Meyrick) (Lepidoptera: Tortricidae) from Thailand with a discussion of characters defining the genus. Proceedings of the Entomological Society of Washington 107(4): 869–882.

Razowski J (1989) The genera of Tortricidae (Lepidoptera). Part II: Palaearctic Olethreutinae. Acta Zoologica Cracoviensia 32(7): 107–328.

Razowski J (1999) Catalogue of the species of Tortricidae. Part V: Palaearctic Eucosmina and Enarmoniina (Insecta: Lepidoptera). SHILAP Revista de lepidopterologia 27(108): 437–506.

Rose HS, Pooni HS (2005) Taxonomic studies on the family Tortricidae (Tortricoidea: Lepidoptera) from Northwestern India–Tribe Eucosmini (Olethreutinae). Zoos' Print Journal 20(2): 1751–1765.

Zhang AH, Li HH (2005) A Study on the Genus *Eucoenogenes* from China (Lepidoptera: Tortricidae: Olethreutinae). Entomotaxonomia 27(2): 125–130.